

A stylized graphic of a DNA double helix on the left side of the page. The two strands are represented by thick, curved lines, one in a vibrant pink and the other in a light blue. They are connected by several horizontal rungs representing base pairs, colored in alternating light blue and pink. The entire graphic is set against a dark green background.

CELL PROCESSES & ENERGY

EDITABLE student notebook pages - digital links included for students to complete guided notes on Google Drive

Question: In the photosynthesis equation, what does the arrow represent?

PHOTOSYNTHESIS

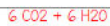
Nearly all living things obtain energy either directly or indirectly from the energy of sunlight captured during photosynthesis.

Photosynthesis — process by which a cell captures energy in sunlight and uses it to make food.

Plants, such as grass, use energy from sun to make their own food; therefore, this type of organism is called an **autotroph**.

The caterpillar obtains energy from eating grass and the bird obtains energy by feeding on caterpillar. These organisms which cannot make their own food are called **heterotrophs**.

During photosynthesis, autotrophs use the sun's energy to convert carbon dioxide (CO₂) and water (H₂O) into oxygen (O₂) and sugars (C₆H₁₂O₆).

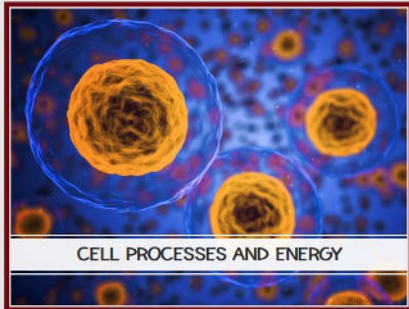


TWO STAGES

STAGE 1

CAPTURING SUN'S ENERGY

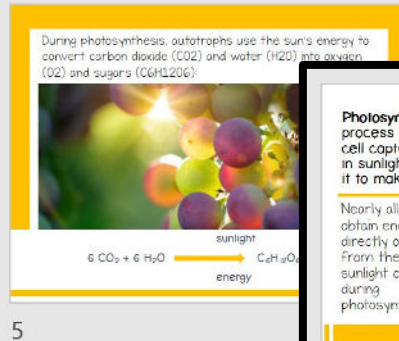
- Process occurs mostly in leaves.
- Chloroplasts in plant cells capture energy using photosynthetic pigment called **chlorophyll**.
- Energy powers stage 2.



1



2



5

TWO STAGES OF PHOTOSYNTHESIS

Photosynthesis process by which a cell captures energy in sunlight and uses it to make food.

Nearly all living things obtain energy either directly or indirectly from the energy of sunlight captured during photosynthesis.



3



Plants such as grass, use energy from sun to make its own food, therefore it's called an autotroph.



The caterpillar obtains energy from eating grass and the bird obtains energy by feeding on caterpillar. These organisms which cannot make their own food are called heterotrophs.

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Notice the opposite photosynthesis

ON EQU

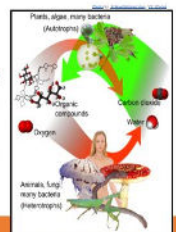
Cellular Respiration

7

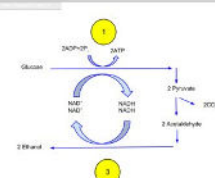
Respiration

Process by which cells obtain energy from glucose by breaking down simple food molecules such as sugar and releasing the stored energy.

• Cellular respiration is different than the term "respiration" which is used for breathing.



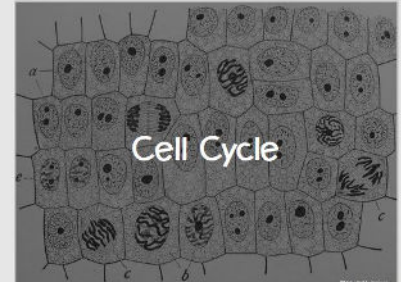
8



Provides energy for cells without using oxygen. For example, alcoholic fermentation used in baking or lactic acid. Fermentation felt in muscles after extreme exertion.

11

Fermentation



12

EDITABLE PowerPoint presentations include high-resolution graphics and feature all topics and vocabulary covered in the notes

EDITABLE Chapter test includes multiple choice, fill in the blank, interpreting diagrams, & short Answers questions

Name _____

CHAPTER TEST CELL PROCESSES

Multiple Choice

Choose the answer that best completes each statement.

- ____ 1. What are the products of photosynthesis?
 - a. carbon dioxide and water
 - b. oxygen and water
 - c. carbon dioxide and sugars
 - d. oxygen and sugars
- ____ 2. What happens during photosynthesis?
 - a. The cell uses oxygen to make food.
 - b. The cell uses light energy to make food.
 - c. The cell uses glucose to make food.
 - d. The cell uses light energy to make food.
- ____ 3. How does photosynthesis occur?
 - a. It adds carbon.
 - b. It creates food.
 - c. It eliminates food.
 - d. It creates energy.
- ____ 4. The stage of respiration that occurs in the mitochondria is _____.
 - a. nucleus
 - b. chloroplast
 - c. cytoplasm
 - d. mitochondria
- ____ 5. The energy-releasing process that occurs in the mitochondria is _____.
 - a. photosynthesis
 - b. respiration
 - c. fermentation
 - d. fermentation
- ____ 6. Under which of the following conditions does photosynthesis occur?
 - a. a very fast rate
 - b. a long walk
 - c. sleeping
 - d. playing video games
- ____ 7. Mitosis is the stage _____.
 - a. the cell's nucleus
 - b. the cell's DNA is
 - c. the cell divides
 - d. the cell's cytoplasm

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- ____ 16. By the end of prophase, each of the following has occurred except _____.
 - a. tighter coiling of the chromosomes
 - b. breaking down of the nuclear envelope
 - c. disappearing of the nucleolus
 - d. lining up of chromosomes in the cell
- ____ 17. The longest phase of the cell cycle is _____.
 - a. prophase
 - b. interphase
 - c. metaphase
 - d. mitosis
- ____ 18. Which of the following equations best represents photosynthesis?
 - a. $C + O_2 + H_2O \rightarrow CO_2 + H_2$
 - b. $6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$
 - c. $6C + 6H_2O \rightarrow C_6H_{12}O_6$
 - d. $C_6H_{12}O_6 + 6CO_2 \rightarrow 6H_2O$
- ____ 19. Leaves appear green because _____.
 - a. changed to heat
 - b. absorbed
 - c. destroyed
 - d. reflected

Complete each statement with the correct word or phrase.

20. Plants use energy from _____ to make food.
21. A _____ is a small opening in a cell membrane.
22. In a DNA molecule, guanine pairs with _____.
23. Small openings called _____ allow substances to enter and leave a cell.
24. During respiration, molecules of _____ enter the cytoplasm.
25. Energy from glucose is released during _____.

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Interpreting Diagrams

Use the diagrams to answer each question.



26. Identify the stages of the cell cycle represented by drawings 1-5.
27. Which drawings represent parts of mitosis?
28. List drawings 1-5 in their correct order, beginning with the drawing that represents interphase.
29. Identify the structures labeled A. What do these structures contain?
30. Explain what is happening in drawing 2.

Essay

Choose *two* essays and answer using the space provided.

31. Explain the following statement: Photosynthesis and respiration are opposite processes.
32. Animals do not make their own food from energy in sunlight. Explain why they still depend on the sun for energy.
33. Define DNA replication and explain its function.

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Answer key included – Images are blurred for copyright reasons



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Contact Information:

Email: admin@nittygrittyscience.com

Website: www.NGSmagnified.com

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